Notebook, N-04-11-18

XE-172 W A Warren N-04-11-18
1904

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2 irons
1 nickel
.200 charge for 5 hours
.100 discharge

(1) [illegible]

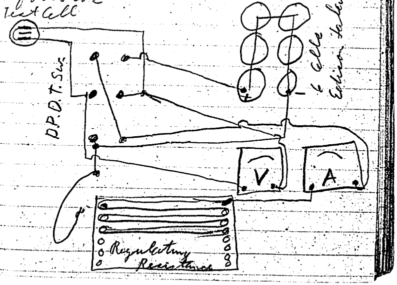
Get a good cell &
charge ~~[illegible]~~ at zero & note
[illegible] Effy. Voltage of
~~[illegible]~~ Chg & discharge
after being back to normal
~~[illegible]~~ ~~Charge~~ Chg at
following temps.

32
40
Normal
80
100
120
150

Efficiency of Edison Storage battery at different temperatures

Obtained test cell #435-8 from testing room cell consisted of 2 iron and one Nickel in small glass jar said to contain 21% KOH.

Nov 30 Connected up charging board as follows


Test Cell
DP.D.T. Sw.
+
-
6 cells
Edison Storage
V
A
Regulating Resistance

12/1/04

Charged cell at 100 MA for 5 hours and discharged at same rate both at normal temperature
see sheet #1+2

input 30 amp min
" 49.6 watt min
output 26 amp min ?
30 wat min ?
eff 75% ?
charge curve marked
discharge " "

12/2/04

Put cell in vessel filled with ice and let it remain until tem become constant at about 1°C started current at 200 M.A. only 0.2 Volt drop across cell evidently short circuit Took cell apart could not find anything set it up again and let temp get down to 1°C and started charge at 200 MA volts at start 1.6 O.K. Charge started at 11.30 AM

marked
□" in Charging curve = 273
× 6 2/3 = 1,822 watt-hour
marked
□ in Discharge curve = 195
× 3 1/3 = 65-0 watt-hour

$\frac{65\text{-}0}{1.822} = 35.6^{9}\%$ eff

12/5/04
On charge at 200 ma
at 20 C° at 10-40 A.M
Off at 3 P.M
Tem Constant at 20°C.
□" in charging curve = 255.7 □"
milli watt hours =
255.7 × 6 $\frac{2}{3}$ 1705 m.w.h.
Charge curve marked ^
Discharge " " o
Discharged ~~started~~ at 4 .PM
by testing room
□" in Discharg curve 202.14
milli watt hours discharge
" = 202.14 × 3 $\frac{1}{3}$ = 674.
= 39.5 % eff

Put in 400 mil amp hours
at 100 rate,
discharg 100 R —

12/6/04.

Cell #1 4358 had been put on charge at midnight by mistake
Got cells nos 4269, 4270 4271, 4272, 4273 to charge at 100 rate for 4 hours at different Temps and discharge at 100 rate at normal temperature
Cells were on charge for 11½ h at 200. discharged them to .75 volt.

No 4270 was short circuited charged it at 100 rate for one hour + discharge to .75 V
All cells reached .75 volt in about [illegible] hours

added 6 more Edison Lalande cells to charging battery And arranged mercury cups so as to be able to run 5 cells in series same formula

Charged 13 hrs @ 200

Discharge

	Run 2		Run 5		Run 8	
	.50	1.0	.50	1.0	.50	1.0
4269	572	458	598	487	618	504
70	575	463	S.C.	S.C.	S.C.	S.C.
71	575	450	599	485	617	502
72	578	450	598	477	617	499
73	575	463	597	475	599	471

12/9

Cell # 4269 charged at 1.00 R
at 30°C on at 12 noon

□" in curve = 179
milli watthours 596.7
Av Volts 149.2
□" in discharge curve 112.85
milli watt hrs. 376.17
milliAmpere hours [illegible] 299
Av volts 1 115
Eff. 63%

12/7

Cell # 4270 @ 100 ma
[illegible] increased

□" in charge curve 199.6
= milli watt hours 665
Av V 1,663
□" in discharge 1043
milli amp hours 273.3
" watt hours 346.7
watt eff 56.4
Av Volts 126.7

Cell # 4271 same
□" charge curve = 198.8
milli watt hours = 662.7
Av Volts 16575
□" in discharge 137.
milli amp hours 360
" watt hours 456.7
watt eff 68.9
Av Volts 1,268

Cell # 4272 same
□ in charge curve = 198.5
milli watt hours = 66.17
Av Volts = 165.4
□ in Dis curve = 136.3
Milli watt hrs = 454.8
" amp " = 351.7
Av Volts = 1.293
Eff = 68.7%

12/7

Cell # 4273 at 1½° C

□" in charge curve = 209.0

milli watt hours 696.7

Av Volts = 174.2

□" in Discharge = 131.1

Mill amp hrs = 341.

" watt " = 437

Av volts = 1.281

12/8 Eff = 62.7%

Put cells on discharge at 10.0 Rate at 22°C

12/9

Charging Cells at 100 watts for 4 hours

4241 @ 65°C
□" in Chg = 172.55
Milli watt hrs = 575.155
Av. Volts = 1.438
□" Discharge = 97.9
m Amp hrs = 267.
watt hrs = 326.5
Av V = 1,221 W Eff = 56,7
w Eff

4242 @ 1½°C
□" in Chg = 208.35
Milli watt hrs = 694.25
Av V = 1.736
□" in Disch. = 135.1
Milli Amp hrs = 335.
" watt " = 450
Av V = 1,344
W Eff = 6,48

12/9

4270 @ 22°C
□" in chg curve = 201.25
Milli watt hrs = 670.85
Av volts = 1.677
□" in dis = 116.75
Mill amp hrs = 311.
" watt " = 389.17
Av volts = 1.251
w Eff = 57.3%

4269 @ 22°C
□" in charge curve = 197.5
Milli watt hours = 658.30
" amp " = 400.
Av Volts = 1.646

Dis
Milli watt hrs = 408.5
" amp " = 321.7
av V = 1.27
Eff = 62.0%

	0	2	4	6	10	20	40	60	80	100	120	140	161	180
271	1.40	.41	.42	.42-	.42	.42.5-	.43.	.435	.43	.43.5-	.44.	.445	.45-	.45.4
72	57.5	65.5	69.5	69.5	70	70.5-	72.+	74	75+	75.5	75.5	75.5+	75-	74
70	54	56.	59.	59.5	61	62.5	64.	65	66.5-	67.5-	68.5-	69+	70	70.5-
69	52.5	53.5	56	56.5	58	59.	61	62+	63.5-	64.	65.	66+	67+	68.0
73	69	71	74	74+	75.	76.	77.5-	79	81	81.+	81.5-	82.	82.5-	83.-
	200	220	240											
271	44.+	.430	43.5		~~7° to 12° F~~			65°C						
72	73.	72.5-	72		1½°C									
70	71.	71.5-	71.5-		20°									
69	68.5	69	69		20°C									
73	82.5-	82.5-	83.		8° to 12° F									

Readings during charge 12/9/04

12/9

4273 @ 10°F = −~~12~~ 12.5 C

varied bet 8° + 12°

□" in Chg curve = 216.55

Milli watt hrs = 7218

av Volts = 1.804

□" Discharge = 113.5

Mill amp hrs = 296

" watt hrs = 3721

Av Volts = 1.257

W. Eff = 51.55%

12/10

Figured up charge curve